

CLAIMS:

What is claimed is:

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- 1 1. A data storage library, comprising:
2 first and second arrays of storage cells, the
3 storage cells in the first and second arrays being
4 operable to receive data storage elements, the first and
5 second arrays describing an interior space between at the
6 first and second arrays; and
7 a third array of storage cells, the storage cells in
8 the third array being operable to receive data storage
9 elements, the third array being substantially located
10 within the interior space;
11 wherein a robotic picker is translatable along a
12 path, the path located within the interior space and
13 comprising sections that pass adjacent to at least some
14 of the arrays.
- 1 2. The library of Claim 1, wherein the path is a closed
2 circuit that passes adjacent to each storage array of the
3 library.
- 1 3. The library of Claim 1, wherein the third array
2 comprises two storage arrays arranged substantially back-
3 to-back.
- 1 4. The library of Claim 1, wherein when the robotic
2 picker is positioned to access a storage element of the

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3 first array, it can rotate so as to access a storage
4 element of the third array.

1 5. The library of Claim 1, wherein the path has
2 sections adjacent to each storage array of the library
3 such that the robotic picker can access any storage array
4 by translating to it along the path.

1 6. The library of Claim 1 wherein the robotic picker
2 has a bi-directional pass-through gripper that can access
3 storage elements on two sides of the access device
4 without rotating the access device.

1 7. The Library of Claim 1, wherein the data storage
2 elements are selected from the group consisting of
3 magnetic tape cartridges, floppy disks, hard disks, and
4 compact disks.

1 8. A data storage library, comprising:
2 a storage area having a plurality of storage arrays,
3 the arrays capable of storing individual data storage
4 elements;

5 an access device capable of accessing data storage
6 elements from the plurality of storage arrays, the access
7 device being translatable along a path;

8 first and second storage arrays within the plurality
9 of storage arrays positioned on opposite sides of the
10 storage area facing each other; and

11 a third storage array within the plurality of
12 storage arrays positioned substantially parallel to the

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13 first and second storage arrays and positioned between
14 first and second storage arrays.

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1 9. The library of Claim 8, wherein by translation along
2 the path the access device can access data storage
3 elements in the first and second storage arrays; and
4 wherein when the access device is positioned to
5 access a storage element in the first storage array, the
6 access device can perform a rotation to be positioned to
7 access storage elements in the third storage array.

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1 10. The library of Claim 8, further comprising a fourth
2 storage array of the plurality positioned substantially
3 parallel to the second storage array and positioned
4 between the second and the third storage arrays, such
5 that when the access device is positioned to access a
6 storage element in the second storage array, the access
7 device can perform a rotation to be positioned to access
8 storage elements in the fourth storage array.

1 11. The library of Claim 8, wherein the path passes
2 continuously past each of the storage arrays of the
3 plurality such that the access device can access any
4 storage array of the plurality by translating along the
5 path.

1 12. The library of Claim 8, further comprising a fourth
2 storage array positioned substantially perpendicular to
3 the first and second storage arrays such that the first,
4 second, and fourth storage arrays form a U-shape.

1 13. The library of Claim 8, wherein the path is a track
2 upon which the access device moves.

1 14. The library of Claim 8, wherein the access device
2 has a bi-directional pass-through gripper that can access
3 storage elements on two sides of the access device
4 without rotating the access device.

1 15. The Library of Claim 8, wherein the data storage
2 elements are selected from the group consisting of
3 magnetic tape cartridges, floppy disks, hard disks, and
4 compact disks.

1 16. A data storage library, comprising:
2 first, second, third, and fourth storage arrays for
3 holding data storage elements, all four storage arrays
4 being substantially parallel to one another;
5 an access device capable of accessing data storage
6 elements from the four storage arrays;
7 wherein when the access device is positioned to
8 access storage elements from the first storage array, the
9 access device can be rotated substantially 180 degrees to
10 access storage elements from the second storage array;
11 and

12 wherein when the access device is positioned to
13 access storage elements from the third storage array, the
14 access device can be rotated substantially 180 degrees to
15 access storage elements from the fourth storage array.

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1 17. The library of Claim 16, wherein the first and
2 fourth storage arrays each face inward forming a space
3 between them, and the second and third storage arrays are
4 positioned substantially back-to-back within the space
5 facing outward.

1 18. The library of Claim 16, further comprising a fifth
2 storage array substantially perpendicular to the first
3 and fourth storage arrays and positioned relative to the
4 first and fourth storage arrays such that the first,
5 fourth, and fifth storage arrays form a U-shape.

1 19. The library of Claim 18, further comprising a sixth
2 storage array substantially parallel to the fifth storage
3 array such that the first, fourth, fifth, and sixth
4 storage arrays comprise a four-sided shape.

1 20. The library of Claim 16, wherein the access device
2 translates along a single path which passes adjacent to
3 all storage arrays in the library.

1 21. The Library of Claim 16, wherein the data storage
2 elements are selected from the group consisting of
3 magnetic tape cartridges, floppy disks, hard disks, and
4 compact disks.

1 22. A method of data storage, comprising:
2 positioning first, second, third and fourth storage
3 arrays such that the four arrays are substantially
4 parallel to one another, the second and third arrays

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5 being positioned substantially back-to-back and between
6 the first and fourth arrays;

7 when a robotic picker is in a first orientation,
8 translating the robotic picker along a path to access an
9 individual data storage element from the first or fourth
10 array; and

11 when the robotic picker is in the first orientation,
12 translating the robotic picker along the path and
13 rotating the robotic picker 180 degrees to access an
14 individual storage element from the second or third
15 storage array.

1 23. The method of Claim 22, wherein when the robotic
2 picker is in a second orientation, translating the
3 robotic picker along a path to access an individual data
4 storage element from the second or third array; and

5 when the robotic picker is in the second
6 orientation, translating the robotic picker along the
7 path and rotating the robotic picker 180 degrees to
8 access an individual storage element from the first or
9 fourth storage array.

1 24. The method of Claim 22, further comprising a fifth
2 storage array substantially perpendicular to the first
3 and fourth storage arrays and positioned relative to the
4 first and fifth storage arrays such that the first,
5 fourth, and fifth storage arrays form a U-shape.

1 25. The method of Claim 22, wherein the robotic picker
2 is capable of translating and rotating simultaneously.

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- 1 26. The Library of Claim 22, wherein the data storage
2 elements are selected from the group consisting of
3 magnetic tape cartridges, floppy disks, hard disks, and
4 compact disks.

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